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ABSTRACT

The purpose of this study was to describe the function-form relationships in a child's developing language by establishing a methodology for examining the child's early propositions and the predications which express them, identifying the points in the syntactic hierarchy at which different "meanings" are encoded, and investigating the relationships between predicational structures and conceptual constructs. A child named Augusta was studied intensively from her eighteenth month through her thirty-first month, and her spontaneous utterances were analyzed for syntax, sentence-type, and propositional construct-type. Findings were that the child initially used specific words and/or constructions in specific positions to express particular "meanings"; each of these form-meaning composites initially had one or two functions but later generalized to a number of different functions; and each propositional construct-type had different syntactic realizations. The conclusion was reached that the development of predicational structures can be more precisely described by the analysis used here than by syntactic analysis alone. (Author/EE)

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THE DEVELOPMENT OF PREDICATION

IN CHILD LANGUAGE

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New York, New York

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ABSTRACT

The purpose of this study was to describe the function-form relationships in a child's developing language by (1) establishing a methodology for examining the child's early propositions and the predications which express them, (2) identifying the points in the syntactic hierarchy at which different "meanings" are encoded, and (3) investigating the relationships between predication structures and conceptual constructs.

A child named Augusta was studied intensively from her eighteenth month through her thirty-first month. The data were collected in bi-monthly tape-recorded play sessions. Augusta's spontaneous utterances were analyzed for syntax, sentence-type, and propositional construct-type. The investigator used sector analysis, a tagmemic grammar, as the theoretical syntactic base and devised conceptual construct and propositional construct categories for analyzing the child's underlying semantic intentions.

The three major findings were: (1) The child initially used specific words and/or constructions in specific positions to express particular "meanings." (2) Each of these form-meaning composites initially had one or two functions but later generalized to a number of different functions. (3) Each propositional construct-type had different syntactic realizations.

The investigator concluded that the development of predication structures can be more precisely described by the analysis used here than by syntactic analysis alone.

TABLE OF CONTENTS

LIST OF TABLES	Page
	iii
Chapter	
I. INTRODUCTION	1
1.0 Statement of the Problem	1
1.1 The History of Developmental Psycholinguistics	2
1.2 Rationale for a New Psycholinguistic Model	7
1.3 Purpose of the Present Study	9
II. PROCEDURES	11
2.0 Description of the Study	11
2.1 The Subject	12
2.2 Collection and Transcription of the Data	13
2.2.1 Equipment Used for Recording and Transcribing the Data	15
2.2.2 The Corpus	15
2.3 Analysis of the Data	17
2.3.1 Syntactic Analysis	17
2.3.2 Sentence Type Analysis	22
2.3.3 The Construct Analysis	23
2.4 Definitions of Key Terms	33
III. CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH	34
3.0 Conclusions	34
3.1 Implications for Further Research	42

REFERENCES	Page 46
APPENDIX A: Augusta's Verbs, 18:12-31:12	54
APPENDIX B: Sector Analysis of Data for 18:12, 19:8, 24:15, and 31:12	60
APPENDIX C: The Verb Key to Augusta's X-Word, Quasi-Auxiliary, and Verb Collocations	90
APPENDIX D: Sector Analysis of a Command	92
APPENDIX E: Augusta's Idiotropic Assertions with <u>Want</u> and <u>Need</u> , Questions with <u>Can</u> , and Commands with <u>Let's</u>	98
APPENDIX F: Augusta's Idiotropic Questions and Commands with <u>You</u> Subjects	104
APPENDIX G: Toys and Books Frequently Mentioned in Text	107
APPENDIX H: Constituent Structure of Augusta's Construction-Types	109

LIST OF TABLES

	Page
Table 1. The Functions of the Sectors in an English Sentence	19
Table 2. Conceptual Constructs	26
Table 3. Propositional Constructs	29
Table 4. The Communicative Forms of Some Propositional Constructs	31
Table 5. Tagmemic Distribution and Corresponding Meanings of <u>Can</u>	39

CHAPTER I

INTRODUCTION

1.0. Statement of the Problem

The study of child language within the interdisciplinary framework of what has come to be called "developmental psycholinguistics" is commanding considerable attention today both in the academic community and in the world at large. Most of the work done to date has been based upon a school of linguistics called transformational-generative grammar. Since the questions posed for any study can only be answered within the restrictions of the theoretical framework which forms the basis of the study, it is of critical importance that researchers in child language have more than one viable alternative model against which they can check their data. This is particularly true in instances in which the extant model allows answers which are either counter-intuitive or otherwise unsatisfactory in some way.

It is only within the past few years that there has been any serious questioning of the efficacy of transformational-generative theory for the study of child language. Scholars are becoming more and more aware that any serious study of language development must attempt to incorporate findings of other scholars in both developmental psychology and linguistics. The present study represents one such attempt.

1.1. The History of Developmental Psycholinguistics

Psychologists and linguists have long been interested in the language learning processes in both children and adults. It was not until 1953, however, when scholars from the disciplines of psychology and linguistics met in an interdisciplinary institute at Indiana University, that the field of psycholinguistics began to take form. The psychologists who attended the institute were primarily behaviorists and learning theorists, and the linguists were structuralists and anthropologists, at least by training. (The proceedings of this seminar were published simultaneously, interestingly enough, as supplements to the International Journal of American Linguistics and The Journal of Abnormal and Social Psychology, which made the information immediately accessible to linguists and psychologists alike.¹)

A large body of research in the 1940's and early 1950's had been reported in the area of infant vocalizations, the acquisition of phonological and morphological systems. In addition, there were several diary studies, mostly by scholars who kept written records of the language development of their own children. These early studies have been summarized in extensive bibliographies by Leopold,² McCarthy,³

¹This work was subsequently published as a monograph, Psycholinguistics: A Survey of Theory and Research Problems, eds., Charles E. Osgood and Thomas A. Sebeok (Bloomington, Ind.: Indiana University Press, 1965).

²Werner F. Leopold, Bibliography of Child Language (Evanston: Northwestern University Press, 1952).

³Dorothea McCarthy, "Language Development in Children," in Leonard Carmichael (ed.), Manual of Child Psychology (New York: John Wiley and Sons, 1954), pp. 492-630.

and Carroll.¹

A major thrust in psycholinguistics during the past decade and a half has been in the study of the acquisition and development of language in young children.² Some important early research in this area, which has come to be called "developmental psycholinguistics," was done at the University of California at Berkeley by Wick Miller and Susan Ervin (now Ervin-Tripp) and at Harvard University under the leadership of Roger Brown and his associates. Both groups worked from a corpus of data collected from children who were learning their native language. These early studies of child language, which were carried out during the 1950's and early 1960's, were of three basic forms: (1) descriptions of various aspects of the child's acquisition of word classes (i.e. "parts of speech") and other morphological forms (such as inflections); (2) more general considerations of imitation and comprehension as well as the quality of the language used by adults talking to children and how the adults' questions and expansions might affect the language of the children; and (3) some systematic specifications of

¹John B. Carroll, "Language Development in Children," Encyclopedia of Educational Research (3d ed.; New York: Macmillan Co., 1960), pp. 744-752.

²For comprehensive surveys and bibliographies of studies in developmental psycholinguistics, see Martin D. S. Braine, "The Acquisition of Language in Infant and Child," in Carroll E. Reed (ed.), The Learning of Language (New York: Appleton-Century-Crofts, 1971), pp. 7-95; John Eliot (ed.), Human Development and Cognitive Processes (New York: Holt, Rinehart and Winston, Inc., 1971); Susan Ervin-Tripp, "Language Development," in M. Hoffman and L. Hoffman (eds.), Review of Child Development Research, Vol. 2 (Ann Arbor: University of Michigan Press, 1966); Walter MacGinitie, "Language Development," Encyclopedia of Educational Research (4th ed.; New York: Macmillan Co., 1966); and A. Richard Diebold, Jr., "A Survey of Psycholinguistic Research, 1954-1964," in Osgood and Sebeok (eds.), Psycholinguistics: A Survey of Theory and Research Problems, pp. 205-291.

the kinds of "rules" which the child in some way "knows" and uses in his early utterances.¹

The linguistic descriptions used in these early studies essentially followed the theoretical formulations proposed by such structuralists as Charles C. Fries² and H. A. Gleason, Jr.³ They were, for the most part, distributional studies concerned with the designation of the form classes used by children in their early two- and three-word utterances and with the co-occurrence restrictions of these forms.

During this same period of time (that is, during the mid-1950's and early 1960's), psychologists, as Brown has pointed out, were far from speaking with a single voice, but certainly those American psychologists who were concerned with language acquisition were within the mainstream of what is generally known as "behavioral psychology." Most of the prominent theories of the times held to some kind of stimulus-response mechanisms with the concomitant belief in the necessity of some kind of reinforcement.

¹Brown has published in a single volume some of his major papers which reflect the changes in his theoretical perspective from 1954 through 1969, and which, in fact, exemplify many of the major changes in developmental psycholinguistics during this period. See Roger Brown, Psycholinguistics (New York: The Free Press, 1970).

²See, for example, Charles C. Fries, The Structure of English (New York: Harcourt, Brace and Company, 1952).

³H. A. Gleason, Jr., An Introduction to Descriptive Linguistics (2d ed.; New York: Holt, Rinehart and Winston, 1961).

Between 1957 and 1959, Noam Chomsky, a young linguist at the Massachusetts Institute of Technology, published two works which were to be crucial to the psycholinguistic movement: (1) Syntactic Structures,¹ in which he pointed out the inadequacy of behaviorist psychology and structural linguistics for explaining human language and outlined his own transformational-generative grammar as a theoretical perspective from which to view language and the means for evaluating competing grammars, independent of semantic considerations; and (2) a review of Skinner's Verbal Behavior, in which he attacked the claims of behavioral psychology in general, Skinner's work in particular, and in which he proposed, in very general terms, that the grammar of a language is ideally "a mechanism that provides an enumeration of the sentences of a language in something like the way in which a deductive theory gives an enumeration of a set of theorems."²

This critique by a linguist of the work of a prominent scholar in behavioral psychology provided overlap between the two disciplines which could hardly be ignored. Chomsky, in so strongly attacking a major work in psychology, had begun to pave the way for his later claim that linguistics is a branch of cognitive psychology.³ When the Committee on Intellectual Processes Research of the Social Science Research Council held its conference on First-Language Acquisition in

¹Noam Chomsky, Syntactic Structures (The Hague: Mouton and Co., 1957).

²Noam Chomsky, "A Review of B. F. Skinner's Verbal Behavior," in Language, 35:26-58, March, 1959.

³Noam Chomsky, Language and Mind (New York: Harcourt, Brace and World, Inc., 1967).

1961, Chomsky was there as a discussant, as were transformationalists Robert B. Lees and Morris Halle. This conference further established the link between transformational-generative grammar and the study of language acquisition.¹

In his preface to Psycholinguistics, Roger Brown discusses that first SSRC conference and subsequent developments in the field as follows:

When the SSRC held its conference, the structural linguistics of Bloomfield, Fries, Trager, Pike, Wells, Bloch, and others held sway. In the late 1950's and early 1960's the structuralists were attacked and, in the opinion of most younger linguists, thoroughly discredited by the transformationalists, under the leadership of Noam Chomsky. In the middle 1960's the first version of transformational linguistics was drastically revised by Chomsky, Postal, Katz, and others. Now, in the late 1960's, a much more drastic revision is in progress with James McCawley, John R. Ross, and George Lakoff leading the way. With a fifteen-year perspective it becomes clear that linguistics has its schools consecutively whereas psychology has its schools contemporaneously and that fact alone would account for the import-export balance in psycholinguistics. How different things would be if all psychologists were Skinnerians!²

One is moved to add: "And how different things would be if there had never been a Chomsky!"

By 1970, the study of child language had begun to take quite a new direction. Lois Bloom working within the theoretical framework of transformational-generative grammar, departed from the purely syntactic model suggested by Chomsky³ and utilized both linguistic and non-linguistic contexts in analyzing the language of three children. She

¹Proceedings reported in Bellugi and Brown (eds.), The Acquisition of Language.

²Brown, Psycholinguistics, pp. viii-ix.

³Noam Chomsky, Aspects of the Theory of Syntax (Cambridge, Mass.: MIT Press, 1965).

also paved the way for a discussion of cognitive-semantic concepts evident in the language of children.¹

I. M. Schlesinger² and David Ingram³ published papers which indicated dissatisfaction with the extant syntactic models and proposed alternative means for studying language acquisition which utilized semantic rather than syntactic bases. Both writers clearly recognized the need for greater attention to the intentions of the child and to the developmental nature of child language.

1.2. Rationale for a New Psycholinguistic Model

Each of the psychological and linguistic theories proposed in the past represented an attempt to improve upon earlier theories. The research in child language acquisition has, in turn, reflected these changes. In a chapter for a projected book on developmental psycholinguistics, Roger Brown discusses the theoretical notions which he considers crucial to the study of children in an early stage of their language development, a stage which he calls "Stage I."⁴ His

¹Lois Bloom, Language Development: Form and Function in Emerging Grammar (Cambridge, Mass.: MIT Press, 1970). This book is based on a doctoral study completed in 1968.

²I. M. Schlesinger, "Production of Utterances and Language Acquisition," in Dan I. Slobin (ed.), The Ontogenesis of Language (New York: Academic Press, 1971), pp. 63-101. This paper was first circulated in mimeographed form in 1968.

³David Ingram, "Transitivity in Child Language," Language, 47:888-810, December, 1971.

⁴Roger Brown, "Stage I: Semantic and Grammatical Relations" (Cambridge, Mass.: Harvard University, in preparation).

discussion is based upon the data from his own longitudinal study of three children as well as upon Bloom's data and some of the data collected by Melissa Bowerman¹ and Martin D. S. Braine.² After examining the data, constructing grammatical models, and combining theoretical constructs in an attempt to produce an overall theory to account for all the children's utterances at Stage I, Brown states that "it is important to see that only the Chomskyan grammar offers any formal apparatus suited to the task."³ In his final summary, however, he concludes that "we have not found a fully satisfactory formal representation for Stage I grammatical competence, partly because of notational problems and partly because we do not know just what the competence is in certain respects."⁴

It would seem that many of the "notational problems" mentioned by Brown might be solved by utilizing a different grammatical system. As was suggested above, the kinds of questions one asks will to a great extent determine the kinds of answers one will find; similarly, the kind of grammatical analysis one uses will largely determine the kinds of language features that one will note. To this end, it seems that it may be possible to discover additional "facts" about child language by examining the same kind of data cited by Brown within a different

¹Melissa Bowerman, "Learning to Talk: A Cross-Linguistic Study of Early Syntactic Development, with Special Reference to Finnish" (unpublished Doctoral dissertation, Harvard University, 1970).

²Martin D. S. Braine, "The Ontogeny of English Phrase Structure: The First Phase," *Language*, 39:1-14, January, 1963.

³Brown, "Stage I: Semantic and Grammatical Relations," p. 255.

⁴*Ibid.*, p. 256.

grammatical framework. In addition to a different syntactic analysis, there is a concomitant need for an underlying philosophy of what is learned (and learnable) by the child about language, which will coincide with, rather than either ignore or contradict, what is known about his general cognitive and perceptual development.

In stating the purpose of her study of Kathryn, Eric, Gia, Bloom posed the following questions:

What are the earliest syntactic structures acquired? What is the sequence in which particular structures are acquired? What is the function of these structures in the course of their acquisition?¹

The answers to these questions, which were asked within the theoretical framework of transformational-generative grammar, provided invaluable insights into the nature of children's early language and even into the applicability as well as the limitations of the theory of transformational grammar for studying child language.

It would seem that additional insights should come from asking essentially these same questions within a different framework--a framework which explicitly allows for examining a hierarchy of language functions and their manifesting linguistic forms in relation to the underlying conceptual notions which the child expresses through language.

1.3. Purpose of the Present Study

The general purpose of the present study was to define the function-form relationships in children's developing language, from single-word utterances to "full sentences," and to establish a

¹Lois Bloom, Language Development: Form and Function in Emerging Grammars (Doctoral dissertation, Columbia University, 1968), p. 22a.

methodology for examining the relationships between children's predicational structures and their underlying conceptual notions. In order to achieve this purpose, a child named Augusta was studied intensively from her eighteenth month through her thirty-first month. The basic linguistic methodology used was sector analysis (as described in section 2.3 of the study), but the complete analysis drew upon other theoretical bases in addition to sector analysis. The following questions were proposed to be answered: (1) Is it possible to explain the development of predicational structures by making a hierarchical sector analysis of a body of data from single-word utterances through more complex structures? (2) Do children express different kinds of "meanings" at identifiable points in the linguistic hierarchy? (3) What is the relationship between the development of linguistic structures and the cognitive structures suggested by Piagetian research?

CHAPTER II

PROCEDURES

2.0. Description of the Study

The present study was part of an ongoing longitudinal study of one child's language development between 18:12 (i.e., the age of 18 months, 12 days) to 31:12. The general purpose of the study was to define the function-form relationships in children's developing language--single words to "full sentences"--and to establish a methodology for examining relationships between children's predication structures and their underlying conceptual notions. The principal aspect of language development under consideration was PREDICATION.¹

The investigator proposed to seek answers to the following questions:

- (1) Is it possible to explain the development of predication structures by making a hierarchical sector analysis of a body of data from single-word utterances through more complex structures?
- (2) Do children express different kinds of 'meanings' at identifiable points in the linguistic hierarchy (i.e., in different sectors and slots)?

¹For the purposes of this study, predication was operationally defined as "saying something about X in such a way as to give 'new information' about X, where X represents either a linguistically stated Subject or something in the 'real world'." This definition was purposely made general enough to account for single-word utterances as well as more complex sentences.

(3) What is the relationship between the development of predication structures in child language and that of the cognitive structures suggested by Piagetian research?

2.1. The Subject

Augusta, the subject selected for the present study, was a white child from an upper-middle class home in a New York City suburb. Augusta was the second of three children in the family, and the only girl. She was a friendly, intelligent, outgoing child who talked and played freely with the investigator during the "play sessions" in her home. The investigator began visiting the family when Augusta was seventeen-months thirteen days old. At that time, her older brother, Dean, was aged ten. A second brother, Abraham, was born when Augusta was eighteen months old. Both Dean and Abraham figured prominently in Augusta's conversations, as did her nurse (Rosa), another member of the household staff (Sally), her mother ("Mommy") and her father ("Daddy"). Augusta lived very much within the confines of the family, with little contact with children of her own age except for a neighbor child named Shari.

The investigator made two visits to Augusta's home before the actual taping began. These two sessions were spent in getting acquainted, in observing Augusta in her natural surroundings, and in determining how much language Augusta had already acquired. Occasionally her mother acted as interpreter; by seventeen months, however, Augusta's speech was almost always intelligible, even to the investigator. She was quite cooperative in repeating what she said if it was not understood the first time. She would imitate the speech of others if she was

asked to, and regularly imitated such speech spontaneously.

It was evident from the outset that Augusta's mother spent a great amount of time helping Augusta learn the names of things, frequently asking "What's this?" and "Can you say . . . ?," and praising the child when she made the correct response. Sometimes Augusta would purposely give an incorrect response and then laugh gaily when her mother told her she was wrong. This became a favorite game, which Augusta sometimes played with the investigator in later sessions.

2.2. Collection and Transcription of the Data

The data for the present study were compiled from tape-recorded play sessions with Augusta. All of the taping was done in Augusta's room, where she was surrounded by her own playthings. In addition, the investigator regularly brought to the sessions toys, books, crayons, paper, and occasionally even candy, to provide variety to an otherwise stable context.

All of the recording sessions were play sessions in which the investigator assumed the role of a grown-up playmate. The investigator had no predetermined objectives for any of the sessions other than to observe and to record as accurately as possible everything that Augusta said, and everything that she did while she was talking. One deviation from normal interaction was the investigator's regular practice of repeating any of the child's utterances which might prove to be unclear when the tapes were later transcribed. These repetitions took the form of exact repetitions of the child's utterances or of restatements of

her utterances in question form. Also, when certain of her utterances seemed ambiguous in the sense that they might be open to different interpretations, the investigator often interjected contextual cues in order to disambiguate them. (For example, when Augusta picked up a broken truck and said "all gone," the investigator said "holding truck with no wheels." If Augusta ever found anything odd about the investigator's repetitions and comments, she never mentioned it.) The investigator usually played with Augusta alone. Occasionally, however, Augusta's mother and her brother Abraham visited the room for a short period of time.

Sometime within 24 hours after each taping session--most commonly immediately after the session--the investigator replayed the tape and made extensive notes about the non-linguistic contexts within which the child's utterances were made. The data as compiled include these contextual notes for instances in which the utterances themselves did not make the context clear. There were very few utterances which could not be transcribed at all.

Following the procedures suggested by Bloom,¹ all adult utterances and contextual information were written in a column on the left of the page, and the child's utterances were written in a column on the right.²

¹Bloom, Language Development.

²See section 2.4 for further explanation of reporting procedures.

2.2.1. The Equipment Used for Recording and Transcribing the Data

The equipment used for taping the data included a Sony TC 110A Cassette tape recorder with an added ECM-95S cardiodoid electret condenser microphone. The tapes were Maxell low-noise cassette tapes. For transcribing, Senheisser earphones (HD 414) were used. All of the equipment proved to be more than adequate.

2.2.2. The Corpus

The corpus of the present study consisted of the utterances made by Augusta during 22 sessions, held at roughly two-week intervals from 18:12 to 31:12. It had originally been proposed to extend the study through Augusta's third birthday; however, it was not possible to collect data during the 5-month interval between 31 months and 36 months, for reasons beyond the investigator's control. Beginning at 36:6 it became possible to resume the taping sessions; the investigator hopes to be able to continue collecting data at monthly intervals until such time as Augusta's speech proficiency closely approximates that of adults in terms of both syntax and propositional construct types.¹ The tape recorded at 31:12 is the last one to be used as data for the present study.

¹Previous investigators of child language development have suggested that children acquire most of the structure of their native language by the age of three. However, at 36:6 Augusta's language still lacked many of the features of adult English: her auxiliary system was still quite undeveloped, and her use of the passive, of certain negative forms, and of sentence adverbials was quite limited.

No attempt was made to keep the taping sessions of equal length. Most sessions continued as long as it was possible to maintain Augusta's interest; in other words, the investigator attempted to obtain as many utterances as possible during each recording session. On certain occasions, however, other constraints--such as those imposed by members of Augusta's family--restricted the length of the session. The sessions lasted an average of 68 minutes.

While all of Augusta's utterances during recording sessions were transcribed, only her spontaneous utterances were used as the corpus for the present study. The child's imitations of the investigator's utterances or of her mother's utterances, as well as all her responses to the adults' questions, were systematically excluded. The decision to exclude such utterances was based on the fact that the structure of the responses to questions is often shaped by the questions which precede them, and the responses themselves will often contain constructions not to be found in the child's own spontaneous utterances until later stages of language development. Also excluded were utterances which were unintelligible in part or in whole, except for those few instances in which utterances were "translated" for the investigator by Augusta's mother. The most common of these was Augusta's use of [didæt] for the question What's that? All sentences were transcribed in traditional orthography with two exceptions: (1) the schwa sound was represented by the symbol [ə] in structures where the determiner a seemed inappropriate, and (2) a few of Augusta's "words" were represented by spellings which differentiated between contrasting forms; for example want a, want to, and wanna represent three different pronunciations for two different meanings.

One transcription from each month of the study was submitted to analysis. The intervening transcriptions were checked for any deviations from the findings in the monthly transcriptions; these were noted and discussed in conjunction with the data for that month. In the 22nd month, there was a considerable difference between the utterances recorded at 22:11 and the utterances recorded at 22:25; both sets of utterances, therefore, were transcribed, analyzed, and discussed in full.

2.3. Analysis of the Data

It was necessary to make three separate kinds of analysis of the data in order to answer the questions originally posed for the study: syntactic analysis, utterance-type analysis, and construct analysis. The syntactic analysis of the child's utterances, using sector analysis as the linguistic framework, revealed surface orders which differed for each of the three major sentence types in English--statements, questions, and commands. A close examination of these sentence types, however, revealed a further sub-categorization which seemed related to what the child was talking about when she produced the utterances. The non-linguistic context within which the utterances occurred provided valuable clues to the possible "meanings" of the utterances, even in cases in which the same lexical forms were used for different functional purposes.

2.3.1. Syntactic Analysis

Sector analysis was used to analyze the syntactic relationships between the various units in Augusta's utterances. For heuristic purposes, the sectors were arranged in a linear display (called the

"sector spectrum" by Allen) rather than in the more usual--and more precise--hierarchical arrangement of positions, constructions, and tagmemes.¹ The sectors were arranged on the data tabulation form in the following sequence:

Topic, Voc., L, F, Q, $\tilde{X}$, S, X, M, V, IO/C, $\tilde{E}$, O, B, O,
B, IO, C, D, E, Z, Voc.

The function of each of the sectors is explained in Table 1 below. (It should be kept in mind that the sectors are positions, which may be either filled or vacant in any given sentence or utterance.)

¹For an example of a complete hierarchical analysis of a complicated sentence, see Allen, English Grammars and English Grammar, pp. 226-227. A hierarchical sector analysis of one of Augusta's most complex utterances is shown in Appendix D.

²See Appendix B for four samples of a linear analysis of the Augusta data.

Table 1
The Functions of the Sectors in an English Sentence

Sector	Function
Topic	Used only in a "topic-comment" sentence in which all the rest of the utterance makes a predication about the topic, which has been "fronted" for emphasis or to focus the hearer's attention.
Voc.	For name of addressee, either before or after the main body of the sentence.
L	For a "linker" which connects the sentence with the preceding sentence(s). Also used for <u>yes</u> and <u>no</u> as responses to preceding utterances.
F, E,	For a "sentence adverbial" which makes a predication about the rest of the utterance.
Q	For a WH-question word in a WH-Question.
$\tilde{X}$	For the X-Word in a question.
S	For the subject of the sentence or utterance.
X	For the X-Word in a statement.
M	For a middle adverb and/or negator.
V	For the verb together with any auxiliaries other than the X-Words.
IO/c	For an indirect object or complement occurring before the object.
$\tilde{B}$	For a particle occurring before the object.
O	For the object of a transitive verb.
B	For a particle occurring after the object.
IO	For an indirect object occurring after the object.
C	For a complement which makes a predication about the preceding subject or object.

Table 1 (continued)

Sector	Function
D	For a predicate adverbial which makes a predication about constructions containing the sectors V through C.
Z	For a tag question or topic occurring after the main body of the sentence.

The core of the sentence is the Trunk construction, which consists of the sequence of higher-layer tagmemes filling the S, X, M, and Y sectors. The Y is the sector for the construction made up of the lower-layer tagmemes filling the sectors V through D. This construction, called a Predicator, consists of two sub-sectors, one of which is obligatory (+H) and one of which is optional ($\pm D$). The H, in turn, is filled by any one of three verbal constructions: a Predicator (+H +D).¹ a Predicatid (+V $\pm O$ $\pm B$ $\pm IO$ $\pm C$), or a Consociative-Predicatid (+V +D_v).²

¹In a Predicator which fills the H position in the lower-layer Predicator, both the H and the D are obligatory. This formulation allows for the kind of recursiveness which is often found in the Predicator.

²The D_v in the Consociative-Predicatid is more closely tied to the verb than is the D in the Predicator.

In the final analysis, the H is always eventually filled by either a Predicator or a Consociative-Predicator.

The S and the Y tagmemes together express the proposition (as explained in section 2.3.3.¹ The predicator in Y, like the verb in Fillmore's proposition constituent, is non-finite. The X and the M tagmemes together seem to make up Fillmore's modality constituent. The X-Words (called "Carriers" in Allen's Verb System) carry time, emphasis, modality, and negation in the form of n't. The M sector has two sub-sectors, one for negation and one for a class of function words called "middle adverbs."

Each of Augusta's fully intelligible spontaneous utterances was entered on the data sheet. The constructions were, admittedly, assigned to sectors on the basis of the investigator's subjective judgment. Braine has suggested that, because the child is obviously working within the system of the adult target language, the analyst must perforce use his own knowledge of the adult system in making the analysis.² This is particularly true when it comes to assigning

¹Sector analysis, like most linguistic and even traditional analyses, has regularly considered the core of the sentence as consisting of a subject and a predicate (in sector analysis, the Trunk). The formulation presented here is a modification of orthodox sector analysis, which was suggested by the data collected for this study and which was adopted since it seems to account more accurately for (1) the fact that English-speaking children regularly do not make use of the X sector for the first several months of their language development, and (2) the fact that in many languages other than English the basic Trunk pattern has the form "S + Y" rather than "S + X + M + Y." The filling of the X (and/or M) position often adds information to the basic assertion of a proposition.

²Braine, "The Acquisition of Language in Infant and Child," p. 20.

structural descriptions to homonymous constructions. Braine's example want more stand up the truck is structurally ambiguous if taken out of context. It could be glossed as (1) 'I want more (men) to stand up in the truck' or (2) 'I want the truck to be stood up more (i.e., again).' In (1), more is taken to be a substitute for the noun phrase more men, which function as the subject of the following predication stand up the truck. In (2), more is taken to be a modifier of the predicator stand up the truck. There is a third possibility, which Braine fails to mention. The child might have been standing up in the truck himself and wished to indicate that he wanted to do so one more time. The utterance could again have been want more stand up the truck if the child had not yet begun to use prepositions as in the glossed version 'I want to stand up in the truck again.'

In any case, the non-linguistic context of the utterance and the analyst's knowledge of the structural possibilities of the adult language would make disambiguation possible.

It has already been pointed out that most sectors are positions for constructions, not positions for single words. Once all of Augusta's utterances had been analyzed according to the linear "sector spectrum," it was possible to lay out all of the data in a temporal sequence and thus to trace the development of any construction or tagmeme, or of the use of any sector, during the course of the 14 months covered by the study.

2.3.2. Sentence Type Analysis

After a decision had been reached as to which sectors had been filled for each of Augusta's utterances, the utterance was assigned to

one or another sentence type (assertion, question, or command) on the basis of the form of the utterance as well as its apparent communicative function. In the adult's sentences, for instance, the communicative functions of asserting, questioning, and commanding are reflected in the syntactic combinations used to make up the sentence. Assertions regularly have the form $S + X + Y$; questions have the form $Q + \tilde{X} + S + Y$ or $\tilde{X} + S + Y$; and commands have the form $\pm S + Y$ (in which the Subject of the command always refers to the hearer). In addition, the adult regularly uses intonational patterns which signal the communicative function of the sentence.

In analyzing Augusta's early utterances—that is, those produced before she had learned to use function words and while her intonation was still quite unreliable it was necessary to rely heavily on non-linguistic contexts. Eventually she came to use the syntactic combinations favored by adults for expressing communicative intent.

The various sentence types are discussed in section 2.3.3. below in conjunction with the propositional constructs which they code.

2.3.3. The Construct Analysis

After the syntactic analysis had been completed, it was obvious that the differences between the various utterances was more than a matter of differences between assertions, questions, and commands. Within each of these categories, there seemed to be a more abstract kind of principle in operation. Braine had observed in his data a distinction between what he called "predicative sentences" and

"ostensive sentences."¹ According to Braine's classification, a predicative sentence is a sentence in which a verb phrase says something about (i.e., makes a predication about) a subject, while an ostensive sentence consists of a demonstrative such as there, here, that, and this, followed by a noun phrase which tends to "identify or name objects, pictures, etc."² According to Braine, the obligatory part of a predicative sentence is the predication; the subject about which the predicate says something is optionally expressed by a child--that is, it may be expressed or it may be omitted in any given utterance. In an ostensive utterance the obligatory item is the noun phrase, the demonstrative word being optional.

It seems to the present investigator that the different sentence types described by Braine reflect different kinds of conceptualizations which a child tries to communicate. That is, the difference between a sentence like This is a car and a sentence like This car is going fast seems not to be a matter of syntax alone, but seems rather to represent two different "propositions" which the child is trying to express.

The philosopher Searle, like the linguist Fillmore, suggests that propositions underlie the actual sentences of a language. He states that the two parts of a proposition (1) refer, and (2) predicate, respectively.³ Since he is concerned only with propositions as encoded

¹ Braine, "The Acquisition of Language in Infant and Child," pp. 32-34.

² Ibid.

³ Searle, Philosophy of Speech Acts, p. 24.

by adults--and since his treatise is a philosophical study written for adults--he does not specify how a speaker determines the content for referring and the content for predicating.¹ Piagetian psychology, however, offers some possible answers to these questions.

According to Piaget, the child's earliest linguistic productions reflect the perceptual and sensory-motor data which he has assimilated during the months prior to speech.² The present investigator re-examined the Augusta data for the purpose of determining just what kinds of conceptual notions this child had encoded (or attempted to encode) in her utterances. There were relatively few such notions coded by Augusta compared with what one would expect from adults in ordinary conversation. These conceptual notions are called "constructs" in the present study. Constructs are defined as "hypothetical entities or processes whose existence can be inferred only from their causes, consequences, or manifestations."³ In the present study, these "causes, consequences, and manifestations" were deduced from or were present in Augusta's linguistic and non-linguistic behavior.

Table 2 below shows the basic constructs that appeared in the Augusta data during the 14 months of this study.

¹ Fillmore's attempt to explain the content in terms of the cases of the nouns is not really very instructive for languages (such as English) which are not inflected for case. The notion of case relations is a linguistic notion which, though it may reflect conceptual notions, does not explain how a child could inductively determine the relation between a given concept and its case realization.

² Jean Piaget and Barbel Inhelder, The Early Growth of Logic in the Child (New York: Harper and Row, 1964).

³ Julius Gould and William L. Kolb (eds.), A Dictionary of the Social Sciences (New York: The Free Press, 1964), p. 134.

Table 2

Conceptual Constructs

I Animate Entities		II Inanimate Entities		III Activities	IV States and Attributes	V Directions and Locations	
People		Animals		Self-Other	Self-Other	Here	Not Here
Self	Other						
'Gusta I, me,	baby Mommy boy girl etc.	doggie kitty bear etc.		play pick up sleep open crying etc.	sleepy cold little open angry etc.	here in here up down etc.	all gone outside downstairs in New York over there etc.

Table 2 (continued)

VI Repetition or Recurrence		VII Part/Whole Relations		VIII Time		IX Reason	X Potential for Activity		
Of Object	Of Activity	Part	Whole	Now	Not Now		Self-determined (Ability)		Other-deter. (Permission)
more some more 'nother 'nother one etc.	more some more again etc.	some all etc.	all yesterday etc.	now etc.		because for me so I can etc.	Affirm. can	Neg. can't	Affirm. Neg. can can't
XI Willingness to Act		XII Obligation to Act		XIII Introspective		XIV Possession		XV Manner	
Affirm	Neg	Affirm	Neg	Affirmative	Negative	Self	Other		
will etc.	won't etc.	should 'posed to have to better etc.	not etc.	want like etc.	don't want don't like etc.	my mine 'Gusta's	his your Mommy's etc.	that way carefully etc.	

It should be noted that the constructs shown in Table 2 are conceptual constructs, not linguistic categories. (The examples given in each of the categories are to be taken as labels for sub-concepts, not as "words.") It would seem that these constructs might provide the content for some rather primitive propositions, at least for the child. If the child were to choose one construct for referring (for example, one from category I) and other for predicating (for example, one from categories III through V), the result would be a kind of propositional construct which could then be coded within the constraints of the child's language. For the purposes of the present study, propositional constructs are defined as "constructs consisting of two terms (A and B) which serve as content for sentences, where A 'refers' and B 'predicates.'" When viewed from this perspective, Braine's predicative and ostensive sentences can be seen to be linguistic manifestations of propositional constructs. In the present study, the predicative and the ostensive categories have been assumed to have two manifesting forms each: the idiotropic is a special kind of predicative propositional construct in which the A and the verb in the B are fixed; the existential is an ostensive propositional construct which is used in displaced ostension. These four separate categories were set up because of the different functional relationships which seem to hold between the referring construct (A) and the predicating construct (B). Table 3 shows the four kinds of propositional constructs and the relations between A and B in each of the four.

Table 3
Propositional Constructs

Type	Relationship Between A and B	Example Assertions
Predicative	"B says something about A," where A refers and B predicates about A.	Baby is sitting on the chair.
Idiotropic	"B says something about A," where A is always self and B is expression of "want X," with X representing an object (ob), self-activity (sac), other-activity (oac), or self-other-activity (soac).	I want a cookie.(ob) I want to ride horsie.(sac) I want you to ride horsie.(oac) I want us to ride horsies.(soac) ^a
Ostensive	"A is an instance of B," where A refers to a present object deictically and B identifies the real-world referent of A.	That's a baby. There's a baby.
Existential	"There is/It is AB," where <u>there</u> indicates unidentified A, <u>it</u> indicates identified A, and B gives location of A (but not deictically). <u>It</u> is also used for time and weather announcements.	There's a book on the table. It's your book on the table. It's time to go to bed. It's raining.

^aThe more common form is the command Let's ride horsies rather than the assertion form given here.

The four kinds of propositional constructs shown in Table 3,, in conjunction with the three sentence types (assertions, questions, and commands) yielded a matrix of nine possible affirmative and nine possible negative propositional constructs which can be expressed in English.¹ Asserting, questioning, and commanding are linguistic acts

¹For reasons discussed below, commands are only possible as expressions of idiotropic constructs, resulting in nine rather than twelve propositional construct types.

by which the speaker expresses his communicative intentions.¹ Asserting involves declaring a proposition, either affirmatively or negatively. Questioning involves asking for two different kinds of information: Yes/No questions ask whether a proposition is true or not true; WH-questions request additional information relevant to an incomplete proposition, such as information about manner, place, time, reason, and the like. Commanding involves directing a hearer to act.²

Some propositional constructs are shown in Table 4. Each of the constructs has been categorized according to its affirmative or negative communicative function. (The examples were contrived by the investigator for illustrative purposes. They should not be construed as being representative of a child's propositional constructs in all cases. In fact, some of these communicative forms do not appear in the Augusta data, even though they are all possible in adult English.)

¹It should be noted that the communicative functions suggested here represent a departure from Searle's speech acts. Searle considers asserting, question, and commanding to be "illocutionary acts." In addition, he includes "promising," "warning," "thanking," "advising," "greeting," and the like. It would seem that asserting, questioning, and commanding are either on a different level of "illocutionary acts" than the others or that they are a different kind of "act" altogether inasmuch as all of Searle's "illocutionary acts" rely on the assertion, the question, and the command for their linguistic realization.

²While commands have been listed here with the others, it seems that commands themselves are not linguistic realizations of whole propositions. Rather, it seems that the command is a part of the predication part of a proposition, syntactically functioning as the object of an underlying idiosyncratic "I want X" propositional construct. No one makes a command without wanting the hearer to comply. This is one possible explanation of why commands are not possible linguistic expressions of ostensive and existential constructs.

Table 4

The Communicative Forms of Some Propositional Constructs

Type	Example
<u>Predicative</u>	
Assertion	The boy is sitting on the chair.
Neg. Assertion	The boy is not sitting on the chair.
Question	Is the boy sitting on the chair? (Yes/No) Where is the boy sitting? (Wh) Who is sitting on the chair? (Wh) What is the boy doing? (Wh)
Neg. Question	Isn't the boy sitting on the chair? (Yes/No) Why isn't the boy sitting on the chair? (Wh)
<u>Ostensive</u>	
Assertion	That's a boy. There's a boy. That's Joe.
Neg. Assertion	That's not a boy. That's not Joe.
Question	Is that a boy? Is that Joe? (Yes/No) What's that? Who's that? (Wh)
Neg. Question	Isn't that a boy? Isn't that Joe?
<u>Idiotropic</u>	
Assertion	I want a cookie. (ob) I want to ride my horsie. (sac) I want you to fix my truck. (oac) I want us to go downstairs. (soac)
Question	Can I have a cookie? (ob) Can I ride my horsie? (sac) Will you fix my truck? (oac) Can we go downstairs?
Command	Give me a cookie. (ob) Let me ride my horsie. (sac) Fix my truck. (oac) Let's go downstairs. (soac)

Table 4 (continued)

Type	Example
<u>Idiotropic (continued)</u>	
Neg. Assertion	I don't want to go downstairs.
Neg. Question	Can't I go downstairs?
Neg. Command	Don't go downstairs.
<u>Existential</u>	
Assertion	There's a baby in the box. It's your baby in the box. It's raining outside.
Neg. Assertion	There isn't any baby in the box. It isn't your baby in the box. It's not raining outside.
Question	Is there a baby in the box? Is it your baby in the box? Is it raining outside?
Neg. Question	Isn't there a baby in the box? Isn't it your baby in the box? Isn't it raining?

Once the categories shown in Table 4 had been established, each of Augusta's sector-analyzed utterances was appropriately classified according to the type of propositional construct it expressed. Each one of the propositional construct-types (predicative, ostensive, idiotropic, existential) in conjunction with a sentence-type (assertion, questions, command) makes up an utterance-type (predicative assertion, idiotropic assertion, idiotropic command, and so on).

2.4. Definitions of Key Terms

The following definitions of terms may be useful to the reader in interpreting the findings reported in Chapter III.

Conceptual constructs: Perceptual and cognitive categories which serve as content for propositional constructs. Some conceptual constructs are: person, object, activity, state/attribute, location/direction, time, and manner. (See Table 2 for description of Augusta's major conceptual constructs.)

Propositional constructs: Combinations of conceptual constructs, one member of which 'refers' and the other of which 'predicates.' The various types are differentiated according to the nature of the relationship between the referring part and the predicated part. The propositional construct-types are PREDICATIVE, IDIOTROPIC, OSTENSIVE, and EXISTENTIAL. (See Table 3.)

Sentence-types: The metafunctional categories by means of which propositional constructs are expressed. The sentence-types are ASSERTIONS, QUESTIONS, and COMMANDS.

Utterance-types: Combinations of propositional construct-types which are realized, either affirmatively or negatively, as PREDICATIVE ASSERTIONS and QUESTIONS, IDIOTROPIC ASSERTIONS, QUESTIONS, and COMMANDS, OSTENSIVE ASSERTIONS and QUESTIONS, and EXISTENTIAL ASSERTIONS and QUESTIONS. The affirmative and negative realizations of all the possible utterance-types are shown in Table 4.

Construction-types: Identifiable units which are defined in terms of syntactic relationships. The constituent structure of each of Augusta's construction-types is shown in Appendix II. (The different construction-types are designated in this study by labels with initial capitals to distinguish them from more general uses of the same term. For example, Phrase indicates the construction-type; phrase indicates a more general usage.)

Sectors: Positions for units having referring and predicated functions within utterances. These positions are designated by capital letters in sector analysis. The sectors for English are listed in Table 1.

Slots: Lower-layer positions within constructions.

Tagmemes: FORM-FUNCTION COMPOSITES in the linguistic hierarchy. Syntactic tagmemes are composites of sectors and constructions.

Utterances: Actual expressions of utterance-types in speech. Also called communicative speech acts.

CHAPTER III
CONCLUSIONS AND IMPLICATIONS
FOR FURTHER RESEARCH

3.0. Conclusions

Three major findings emerged during the course of the present study: (1) Initially Augusta used specific words and/or constructions to express particular "meanings" (i.e., conceptual constructs). (2) Each of these form-meaning composites initially occurred in one, or at best two, of the sectors, manifesting specific tagmemes. Eventually Augusta used a number of different constructions of the same construction-type to fill a particular sector, thus expanding the original specific tagmeme to a more inclusive or more general tagmeme. (3) Each of the propositional construct-types had its own particular manifesting tagmemes, which suggests that there are form-function relations on the most abstract levels of the linguistic hierarchy.

All of the findings stated above suggest a possible answer to one of the questions posed for the study: "What is the relationship between the development of linguistic structures and the cognitive structures suggested by Piagetian research?" Several tentative proposals can be made as to the possible nature of first-language acquisition processes, always keeping firmly in mind the fact that the present study of Augusta's language development was carried out within a particular frame of reference and that that frame of reference to some extent determines the kinds of conclusions that can be reached.

During the first year-and-a-half of a child's life he¹ seems to build up "meanings" which he acquires through sensory-motor activity.² These meanings combine in different ways to form "meaning complexes," which have been called "conceptual constructs" in the present study. In addition, the child seems to make several important linguistic discoveries. (1) He learns that human speech involves meaningful rather than random noise. (2) He learns that there are sounds and combinations of sound which can be used to express conceptual constructs--that is, that "words" can be attached to some of the meanings which he already possesses in a sensory-motor sense.³ (3) He learns that these "words" can be used (a) to identify objects and persons, and in some cases even activities (i.e., to make "ostensive" assertions), (b) to request objects and activities (i.e., to make "idiotropic assertions and

¹The masculine pro-nominal is used here to distinguish between generalizations and specific statements about Augusta.

²Cf. Hermina Sinclair de Zwart, "The Transition from Sensory-Motor Behaviour to Symbolic Activity," *Interchange*, 3:119-126, 1970.

³The theory underlying this notion was suggested by Robert L. Allen in "The Structure of Meanings," *Proceedings of the Ninth International Congress of Linguists* (The Hague: Mouton and Company, 1964), pp. 422-426. Allen assumes that once a word is attached to a "meaning," the word itself becomes a part of the total meaning. Bloom seems to agree with this notion when she states that "... for all intents and purposes, the early meaning of the 'word' and the representation of the object may be isomorphic. Thus, the conclusion that substantive words have a strong 'word-image' cognitive representation." (*One Word At A Time*, in press, p. 79.) However, she distinguishes substantive words from function words like more, on, and gone, which she feels are relational and "dependent on other referents in behavior and context for making reference." (*Ibid.*, p. 82.) According to the model used in the present study, these words also have underlying conceptual constructs which function words like of and is probably do not have: that is, the distinction between "substantive words" and "function words" may not be the significant distinction.

commands"), and (c) to comment about the activity, state, attribute, location, or direction of person(s) and/or object(s) in the "real world," including himself (i.e., to make "predicative assertions"). (4) He learns that persons and objects can be linguistically referred to and commented upon within a single utterance, and furthermore that 'object' constructs and 'person' constructs are linguistically referred to within a single overall category (the nominative metafunction), while all other constructs, in various combinations, are expressed within another category (the predicative metafunction). Once the child begins to "refer" and "predicate" within a single utterance, he can be said to be expressing propositional constructs if--and only if--he is performing one of the communicative speech acts listed in (3) above.¹

In predicative utterances, the referring part of the propositional construct is most commonly expressed by the Subject tagmeme. In ostensive utterances, the demonstratives perform the referring function by deictically singling out the real-world referent. That is, the Subject (or demonstrative) usually marks the focus of the utterance about which the predicating part of the propositional construct "says something." This difference in focus can be seen in the pair of utterances I put this in here and This goes in here, in which the former indicates focus upon the speaker and the latter focus upon an object. It would seem that the distinction between 'active' and

¹ Questions are also communicative speech acts. Initially, they are only marked by intonation. It should be noted that "communicative speech acts" as referred to here differ from Searle's "illocutionary acts" in that the former are assumed to consist solely of assertions, questions, and commands within each of the propositional construct categories. Searle does not differentiate between these kinds of speech acts and the more specific ones of promising, warning, and the like.

'passive' sentences is possibly a reflection of this kind of difference in focus.

However, for several months only the predication is an obligatory element in the child's propositional constructs; he can (and does) omit the "referring" part of his propositional constructs as long as their referents are manifest in his immediate non-linguistic context.¹

The assumption being made here is that a child's acquisition of language is essentially tagmemic in nature because, from his first form-meaning composite through his most complex syntactic collocations, what he learns is a sequence of hierarchically ordered form-function composites which are all tagmemes, if one includes under that label (as does Allen) both linguistic and non-linguistic forms and functions.

Augusta tended to learn one word for a general construct which she then used to represent a number of sub-constructs. The clearest example of this phenomenon was in her use of the single-word command open, by means of which she expressed a great variety of activities that she wanted the investigator to perform. Eventually she acquired other verbs by means of which she could express more restricted, less global meanings; as these other verbs were added to her repertoire, she began to use open in accordance with adult usage rather than as a general command.

¹This position is supported by a number of scholars. For example, Werner and Kaplan state that "the beginnings of predication of action are found in situations in which one member of the relation is not linguistically articulated; rather, it is present only as a perceptual object or implied in gestural activity." (Heinz Werner and Bernard Kaplan, Symbol Formation [New York: John Wiley and Sons, Inc., 1967], p. 165 and ff.) See also, Werner F. Leopold, Grammar and General Problems in the First Two Years, Vol. III of Speech Development of a Bilingual Child: A Linguists's Record (Evanston, Ill.: Northwestern University Studies in the Humanities, 1949), pp. 22-27.

It would seem justifiable to claim that the only need for positing "pivots" rather than tagmemes would arise in instances in which some form had no definable function. However, Augusta's forms all seemed to perform some identifiable function. The collocations which some researchers have defined as pivotal relationships, such as this, that, here, and there with nouns and verbs with on, off, up, and down, can all be accounted for in some other way within the model used for the present study.

A second question to be answered by the present study was posed as follows: "Do children express different kinds of 'meanings' at identifiable points in the linguistic hierarchy?" The answer to this question is unequivocally "Yes." In fact, "meanings," like "functions," can be identified on many different levels of the linguistic hierarchy. A much larger number of different kinds of functions and meanings were discovered as a result of using the model followed in this study than even the investigator herself had expected to find. Not only did "words" have meanings, but so did different combinations of constructions and sectors, and of single forms and intra-construction slots, as well as different utterance-types and different propositional construction-types--in other words, all of the many different possible kinds of tagmemes. One obvious example of Augusta's use of a single lexical item to manifest several different tagmemes is to be found in her use of can, which had the tagmemic distribution and "meanings" shown in Table 5 below.

Table 5

Tagmemic Distribution and Corresponding Meanings of Can

Utterance-type	$\bar{X}$	S	X	"Meaning"
Idiotropic Question	can	I		(request for permission) 'Will you let me?'
Predicative Assertion		I	can	'I am able to'
Predicative Assertion		you	can	'You have my permission to'
Predicative Question	can	you		'Are you able to?'

As can be seen from Table 5, there are identifiable differences in the meanings of can depending upon its tagmemic distribution as well as upon its co-occurrence with I or you Subjects. It should be noted that, while adult speakers would have additional collocations of I and you with can, the distributions shown here were the only ones that Augusta used throughout the study--and always with the meanings given for each distribution. There were a number of similar instances of distributional and co-occurrence phenomena throughout the data.

The findings of the present study suggest that linguistic metafunctions are internalized at a fairly early stage in a child's language development. For example, Augusta was able to produce utterances which were identifiable as assertions, questions, and commands during the first month of the study. The strongest evidence of linguistic metafunctions, however, was to be found in Augusta's apparent differentiation between nominal tagmemes, adverbial tagmemes, predication tagmemes, and modification tagmemes. For example,

Augusta used only nominal forms in the Y sector of ostensive utterances. On one occasion she expressed a 'state/attribute' construction in nominal rather than the usual adjectival form: in the utterance That's a nicey. On another occasion she nominalized an activity predication: in the utterance That's a hop. It seems as though Augusta in some way thought of the Y sector in ostensive utterances as a position for the nominal metafunction.

Likewise, Augusta used adjectives as modifiers which were different from those that she used in predications--which suggests a differentiation between modification and predication.¹ She also used adverbial Clauses only as fillers of the D sector and nominal Clauses as fillers of the O sector, which suggests a differentiation between adverbial and nominal metafunctions. Numerous other such instances of differentiation between metafunctions are to be found in the data.

There is some evidence that language learning involves "contextual generalization," as Braine has suggested. However, in suggesting that "grammar acquisition is a process of perceptual learning of pattern," he fails to specify what kind of meaning is to be found in the pattern. It seems that the hypothetical "scanner" which scans input sentences for patterns might pick up metafunctional information in its early scannings. That is, the gross function-form composites would seem to be more significant in the early stages than, for example,

¹There was no evidence in the Augusta data to support the transformational-generative analysis of pre-noun adjectives as being derived from the verb phrase by means of a permutation transformation. Augusta regularly used adjectives before nouns before she used those same adjectives elsewhere. Likewise, some adjectives which she used in predications were never used as pre-noun modifiers. Braine has made this same observation: see "The Acquisition of Language in Infant and Child," p. 40. Bloom's subjects Kathryn (I) and Gia (II) also used different adjectives for modification and predication; Bloom categorized Kathryn's busy and Gia's nice as verbs because they only occurred in the verb phrase, not as modifiers of nouns. (Bloom, Language Development, pp. 53 and 253.)

the patternings of "words" or morphemes. Once the various metafunctions have been "stored," it would be easier to store lower-layer form-function composites according to the metafunctions rather than according to form class. In other words, it would seem that an efficient scanner would scan for tagmemes on different levels of the hierarchical linguistic structure.

One final question posed for this study was: "Is it possible to explain the development of predication structures by making a hierarchical sector analysis of a body of data from single-word utterances through more complex structures?" The answer is affirmative--but with qualifications. While sector analysis provides an invaluable heuristic device for analyzing the syntactic collocations in children's utterances as well as in adults', and although there were many aspects of Augusta's utterances which sector analysis made it possible to identify and to define more clearly, it must be concluded that syntactic analysis alone cannot reveal the multi-level functions of human communicative utterances. It is doubtful that any single syntactic analysis could explain the whole of language structure as it is related to the underlying concepts which it realizes.¹ However, this study has shown that sector analysis used in conjunction with an analysis of conceptual

¹Stratificational grammar, as outlined by Lamb and recently elaborated upon by Lockwood, probably comes closer to relating "sound and meaning" relationships than any other grammar. However, while it brings in meaning more effectively than other grammars, stratificational grammar does not show constructional relationships--and inter-relationships--as clearly as sector analysis does. (For detailed descriptions of stratificational grammar, see Sydney M. Lamb, Outline of Stratificational Grammar (Washington, D.C.: Georgetown University Press, 1966) and David G. Lockwood, Introduction to Stratificational Linguistics [New York: Harcourt Brace Jovanovich, 1972].)

constructs and propositional constructs can reveal, on several levels, the kinds of relationships that other child language investigators have believed to exist—but that have not been explicitly studied within one overall model until now. Many of the procedures used in the present study were based upon ideas found in the writings of such linguists, psychologists, psycholinguists, and philosophers as Allen, Bloom, Braine, Brown, Fillmore, Piaget, Pike, Schlesinger, Searle, Sinclair de Zwart, and Slobin.¹ Certainly the idea that there is a relationship between perceptual/cognitive mechanisms and language did not originate with the present investigator. However, as far as can be determined from the literature, no other investigator has yet formulated a specific model for studying that relationship from a psycholinguistic perspective. Hopefully, the present study will encourage others to pursue and to refine the line of inquiry suggested here.

3.1. Implications for Further Research

The present study adds another body of data to the growing accumulation of knowledge about first-language learning. Such knowledge should contribute to the establishing of a baseline for the linguistic behavior of children who, presumably, are following a "normal" course of language development. Such a baseline should prove helpful for both the analysis of, and curriculum development for, children who are, in some way, deviant from the general population.

¹References to books and articles by these scholars can be found in the References section for the present study, as well as in footnotes throughout the study.

There are a few methodological details which seem worthy of mention. The decision to collect data every two weeks rather than less frequently or more frequently was both well-founded and ill-founded. Collecting data at greater intervals of time could have resulted in missing some of Augusta's fleeting uses of particular constructions as well as some of the interesting examples of her "practicing" new forms. As it was, however, the body of data collected for the present study required an inordinate amount of time to transcribe and to analyze; collecting the data at even shorter intervals would have made analysis by one investigator almost impossible. On the other hand, it would have been helpful to have had tapes of equal length rather than some which represented more time than others. (The ninety-minute tapes, in most cases, were better than both the shorter ones and the longer ones.) In the opinion of this investigator, the optimum sample size and sampling interval would be one-and-one-half hours every two weeks.

There is no doubt that video-tapes would have aided greatly in the study of Augusta's language development. There were some questions which could not be answered during analysis primarily because of an inability to determine the exact non-linguistic context in which an utterance was spoken. (Most of these questions had to do with Augusta's non-linguistic activity or her proximity to objects and to the investigator.) Much of this kind of information had to be cued directly onto the tape. Until such time as video-tape equipment becomes much more portable than it is at present, however, it will not be possible to make such recordings in the child's home. Transporting a small child to a recording studio involves considerable parental cooperation, as well

as a subject who is not in awe of such strange surroundings. Perhaps an adequate compromise would be to hold one audio-taped session in the child's home and one video-taped session in a studio each month.¹

It should be noted that playing with toys, particularly toys which have many individual parts or pieces, like a doll house, is more likely to elicit sentences of different propositional construct types than are many other kinds of activity. Drawing, for example, encouraged Augusta to produce many idiotropic commands since she was often unable to draw what she wanted to and requested the investigator to draw the object for her. When she was looking at a book, she was more likely to use ostensive utterances. The doll house was by far the best toy for motivating predicative, idiotropic, and ostensive propositional construct-types in their various assertion, question, and command forms. However, in the early months of the study, Augusta was not able to see the relationships between toy furniture and real furniture, between wooden dolls and real people, or between the rooms in a doll house and real rooms in her own house.² During the first several months of the study, she was much more interested in books and in gross motor activity, such as riding her hobby horse, than she was in play which involved pretending and manipulation of small objects. She particularly enjoyed

¹The present investigator made one video-tape recording of Augusta with her mother at 22:7. Because they were collected under different circumstances than the other recordings, these data were not included in the corpus for the present study.

²One interesting anecdote occurred on one occasion which illustrates this point well. The investigator and Augusta were playing with the dolls and doll house. The investigator asked, "Where's the kitchen, Augusta?" Augusta looked puzzled for a moment and then answered, very matter-of-factly: "It's in the kitchen."

enjoyed playing with tenpins, stacking large blocks to "make a tower," and putting things into and taking things out of containers.¹ Eventually, however, her dolls and their house and its contents occupied much of her time and interest during recording sessions. She gradually learned to make-believe with her toys--but was never, during the course of the study, able to pretend that she was another person. Verbal interaction with the investigator seemed to be much more important during the early months of the study than it was later. However, even after Augusta was able to play for long periods of time with little or no verbal input from the investigator, Augusta seemed to verbalize more in the presence of the investigator than when she was alone. For example, on the few occasions that it was necessary for the investigator to leave the room, Augusta produced no utterances at all during the investigator's absence.

The present study of Augusta's language is just that--the study of the language development of one little girl from one point of view. The investigator does not claim to know how many of the statements made in the present study are representative of what could be said about other children. Many of the findings are confirmed by the observations of other investigators, however, and a perusal of these observations did not reveal any serious discrepancies in the model itself. One cannot be certain that there are no such discrepancies, however, until large amounts of data have been processed by this model. Hopefully, such research will be forthcoming in the near future.

¹See Appendix G for list of important toys and books used during recording session.

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APPENDIX A

Augusta's Verbs,

18:12-31:12

APPENDIX A

Augusta's Verbs, 18:12-31:12

<u>18:12</u>	<u>19:8</u>	<u>20:13</u>	<u>21:24</u>
boom (?)	boom (?)	✓blow	✓bought
open	✓close	crying	✓broke
snap	✓cry, crying	fix	✓build
	✓fix	get	✓eating
	✓found	✓hold	✓fit
	✓get	pick (up)	fix
	✓happen	✓play	get, got
	✓help	✓put	✓give
	✓look	ride	✓kick
	open	see	look
	✓pick (up)	✓sit (down)	✓made
	✓ride	✓walking	open
	✓see		✓read
	✓sit		riding
	snap		sit (down)
	✓stop		✓sleeping
	*✓stucked		stand (up)
	✓want		✓take (off)
			✓talking
			✓wake, woke (up)
			✓watch

KEY: * = Incorrectly formed by adult standards.

✓ = First time used.

APPENDIX A (continued)

<u>22:11</u>	<u>22:25</u>	<u>23:9</u>	<u>24:15</u>
bought	bought	bought	break, breaking
✓bump	come (on)	✓burp	✓climb (up)
✓come	✓doing	✓carry	close
find, found	find	✓cover	✓draw
fit	get	doing	✓empty
✓go, going	go	✓drink	find, found
✓hear	✓lace	✓fall (down)	fix
hold	make, made	fit, fits	get, got
look	open	go, going	go, going
making	pull	hear	✓have
✓mess	put	✓hug	hold
open	read	✓kiss	✓keep
pick (up)	ride	✓lay (down)	✓like
playing	✓show	✓need, needs	✓lose, lost
✓pull	sit (down)	put	✓love
put	sleeping	✓rolls (around)	need
read	stand (up)	snap	open
ride	✓took	stand (up)	✓pass
✓rocking	✓turn	take, taking	play
see	want, wanna	✓throw	✓push
sitting		✓turn (over)	put
sleeping		wake, woke (up)	✓say
✓stay		want, wanna	see
✓step			show
✓swing			sit
want			sleep
✓wind (up)			stop
woke (up)			take, taking
			✓think
			turn (over)
			wake, woke (up)
			want, wanna
			✓washing
			✓wrap

APPENDIX A (continued)

<u>25:10</u>	<u>26:18</u>	<u>27:24</u>
burp	✓bring	✓bet
✓button	bump	bring
✓call	close	✓brush
fall	✓comb	calling
find, found	come	clean, cleans
get	crying	close
go	doing	come
have	draw	do, doing
look	eat, eating	drink
make	fall, fell	fall, *falled, fell
open	fit, fits	✓feeding
pick, picked (up)	found	✓finished
put	get, got	fix
✓reach	go, goes, going	get, gets, got
read	have	give
see	hold	go, goes, going
✓shake	✓hop	have, has
sit (down)	keep	know
sleeping	kissing	✓lock
snap	✓know	love
✓swimming	✓let	make, making
take	like	✓missed
want, wanna, wants	look	✓move
wind (up)	love	need
✓yelling	need	open
	open	peek
	✓peek	pick (up)
	pick (up)	put
	play	read
	pull (up)	say
	put, putting	scared
	ride	see
	✓ring	sit
	say	sleep
	✓scare	✓spilled
	see	stand, stands
	sit, sits, sitting	stay
	sleep	stop
	stand	take
	take	✓turn (off)
	✓taste	✓use
	✓told	wait
	✓turn (around)	walks
	✓wait	want
	want, wanna, want to	wash, washing
	watch	watch
	✓work	wind
		✓wipe
		woke (up)
		work

APPENDIX A (continued)

28:17

✓be
 bring
 brush (off)
 ✓burn
 clean
 close
 come, came
 crying
 do, did
 ✓drive
 eating
 find, found
 get, got
 give
 go, goes, going
 have
 hear
 help
 like
 look, looks
 *losed
 make, making
 move
 need
 open
 peeking
 play
 push
 put
 ring
 says
 scrub
 see, saw
 ✓shine
 sit (down)
 standing (up)
 take
 talk
 ✓ticking
 ✓trying
 turn, turns
 want, wanna, want to
 wash
 wipe
 work

29:16

bought
 *bringed
 bumped
 clean
 close
 come
 ✓count
 ✓drying
 *falled
 find, found
 fit
 get
 give
 go, goes, going
 hold
 know
 ✓leave
 like
 look
 need
 open
 play
 ✓press
 put
 see
 sit
 sleeping
 take, takes, *taked
 throw
 turn
 use
 want, wanna, want to
 wash, washing
 wind

APPENDIX A (continued)

30:13

✓bend
 ✓bite
 bring, brought
 broke
 ✓catch
 clean
 close, closed
 come
 crying
 doing
 draw
 ✓drop
 dry
 eat
 fall, falling
 feeding
 find, found
 fit
 fix
 get, got, getting
 go, goes, going
 give
 have
 help
 ✓hurt
 ✓laughing
 like
 look, looking
 make, made
 need
 open
 ✓paint
 peek
 play
 put, putting
 read
 ring, *ringed
 said
 see
 sit
 sleep, sleeping
 ✓smiling
 stand
 ✓suck

30:13 (continued)

take, took
 talking
 tell
 ticking
 trying
 turn (off)
 wait
 want
 wash, washing
 woke (up)

31:12

bite, bites
 break, breaks
 brush
 carry
 close
 come
 cry
 draw
 drives
 eat
 find
 fix, fixed
 get, got
 go
 have
 help, helping
 hold
 ✓hope
 hurt
 let
 like
 lost
 make, made
 need
 open
 play
 put
 shakes
 sit
 ✓sticks
 take
 talk
 think
 use
 want, want to
 wash, washing
 wind (up)
 work, works

APPENDIX B

Sector Analysis of Data
for 18:12, 19:8, 24:15, and 31:12

Appendix B - Glossary

The utterance-types are shown in the left-hand margin as follows:

PA = predicative assertion (affirmative)

NPA = negative predicative assertion

PQ = predicative question

IA = idiotropic assertion (affirmative)

NIA = negative idiotropic assertion

IQ = idiotropic question

IC = idiotropic command (affirmative)

NIC = negative idiotropic command

OA = ostensive assertion (affirmative)

NOA = negative ostensive assertion

EA = existential assertion

EQ = existential question

Symbols should be interpreted as follows:

Δ = Content of this sector appears in another sector in the same utterance.

⊕ = Obligatory filler missing; different meaning if sector is obligatorily unfilled; interpretation by context.

✓ = Assumed underlying conceptual construct not linguistically realized; interpretation by context.

Numbers in parentheses indicate number of times utterance was produced in that session.

DATE OF TABULATION:

TRANSLATED BY

[illegible]

TOPIC PREDICATE UTTERANCES 19:8

TYPE	Q	I	S	X	(Neg)	V	IO/C	B	O	B	IO	C	D	E
1 PA						pick	up							(2)
2 PA						crying	up							(3)
3 PA														(8)
4 PA												all pipe		
5 PA												up here		(5)
6 PA						open						table		
7 PA														
8 PA						crying								
9 PC						happen								
10 PC														(2)
11 PA														
12 PC														
13 PA						fix	it							
14 PC														
15 PC														(5)
16 PA						spill								(2)
17 PA						cry								
18 PA						found	it							
19 PC														
20 PA														(2)
21 PA						no								
22 PA						snap								
23 PA														
24 PC														(2)
25 PC														
26 PA														
27 PA														
28 PA														
29 PA														
30 PA														
31														
32														
33														
34														

TYPE	Q	X	S	X	(Neg)	V	IO/C	B	O	B	IO	C	D	E
1 PA														
2 PA														
3 PA						all fire								
4 PA						down								(3)
5 PA						down								
6 PA						quick								
7						quick								
8 PA														
9 PA														
10 PA														
11 PA														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32														
33														
34														
35														

TIME	TOP	L	P	Q	X	S	X	(Ver)	V	IO/C	B	C	D	E
1 PA									lose					
2 PA									fix					
3 PA						I			fix					(2)
4 MPA						I	can't		lose					(2)
5 PA						I			play					
6 PA									put					
7 PA						I			kind					
8									play					
9 MPA						I	can't		play					
10 PA						I			play					
11 PA									play					
12 PA						I	don't		like					(2)
13 MPA						I			love					
14 PA									play					
15 PA									play					
16 PA						I			play					
17 PA						I			play					
18 PA						I			play					
19 PA						I			play					
20 PA						I			play					
21 PA						I			play					
22 PA						I			play					
23 PA						I			play					
24 PA						I			play					
25 PA						I			play					
26 PA						I			play					
27 PA						I			play					
28 PA						I			play					
29 PA						I			play					
30						I			play					
31						I			play					
32						I			play					
33						I			play					
34						I			play					
35						I			play					

TIME	TOP	1	P	Q	X	S	X	N	V	IO/C	S	O	B	C	D	E	2
1 PA					I	I	A		ford			it					(1)
2 PA									FD					rite-dite			
3 PA					I	I	can't		fix			it					
4 PA					I	I	can't		base			it		out			
5 PC				there	's	other arm								A			
6 PA							A		lost			a hand					
7 PA						she	A		lost			a hand					(1)
8 PC				there										A			
9 PC				there	's	a baby			sleep					A			
10 PA						baby									In a bath		
11 PC				what	's	A								In there			
12 PA							A		lost			a hand					
13 PA						that's	A		a lost			a hand					
14 PA									have			a baby					
15 PA						this	is	not	sit					good			
16 PA														In the			
17														latitude			
18 PA									walking			it					
19 PA									close			it		up			
20 PA						I			fix			it					
21 PA									a put								
22 PC				what	's	A								a bath			(2)
23 PA														In there			
24 PA						dress			FD					on a head			
25 PA				what		A								on a head			
26														In there			
27																	
28																	
29																	
30																	
31																	
32																	
33																	
34																	
35																	

TYPE	TOP	L	P	Q	X	S	X	(NOT)	M	V	IO/C	S	O	B	C	D	E	Z
PA										Ø			that		in there			
PA						you									Deris			
PA										found			baby chair					
PA										climb			look			up there		
PA													a boat			at some boats		two boats
PA										find								
PA										looking								
PA										do					on the table			
PA															all about A		(2)	
PA						that	's			think			so				(2)	
PA										surprised								
PA									not	so								
PA										draw			it					
PA										wrap			it		up			
PA										Ø						like that		
PA										taking			the baby					

REF	(Self) S	(Neg)	(Want) V	(Obj or Act) O
1A	/		/	see finger
1A	/		/	play fast-in-slow-out
1A	/		/	find
1A	/		/	look at Self/O
1A	/		/	fix that
1A	/		/	fix a baby chair
1A	/		/	more (activity)
1A	/		/	more put in
1A	/		/	more (object)
1A	/		/	want to
1A	/	don't	need	it
1A	/	don't	want	him even out
1A	/	don't	want	play tables
1A	/	don't	want	play tables
1A	/		want	
1A	/		want to	not sit there
1A	/	don't	/	play tables
1A	/		want	sleep in there
1A	/		/	sleep in there
1A	/		/	look at it
1A	/		want	it come out
1A	/	don't	want	that
1A	/	don't	need	that
1A	/	don't	want	a baby in there like that
1A	/		want	have him
1A	/		need	'mother baby
1A	/		need	'mother baby
1A	/		want	it
1A	/		need	that
1A	/		need	baby chair
1A	/		need	two baby's coty chair
1A	/	don't	want	not play

TYPE	SY	S	V	B	O	B	IO	C	Di	De
12	Can	I	put	on	it					
12	Can	I	look					in there		
12	Can	I	have		it					
12	Can	I	look					at it	(3)	
12	Can	I	put		it					
12	Can	I	open		it					
12	Can	I	look					at there	(3)	
12	Can	I	hold		it					
12	Can	I	look					at the cards		
12	Can	I	draw					on paper	(2)	
12	Can	I	show		it		to him			
12	Can	I	have		all the babies					
12	Can	I	put		them			in here		
12	Can	I	have		a cat					

TOPIC INTERPIC UTTERANCES 24:15

DATE OF TABULATION

TABULATED BY

TIME	Word	Not	Other	V	S	O	B	C	D	Voc
10	dit	/	/	dit					In the bathtub	
20	dit	/	/	dit			down			(2)
30	dit	/	/	dit			back			
40	dit	/	/	push		him				
50	dit	/	/	push		the water				(3)
60	dit	/	/	push		the baby chair				
70	dit	/	/	ix						
80	dit	/	/	matched						
90	dit	/	/	look						
100	dit	/	/	loop		your feet	down			
110	dit	/	/	turn over						baby
120	dit	/	/	wake up					In the morning	
130	dit	/	/	wake up						baby
140	dit	/	/	wake up		it				
150	dit	/	/	say		head				
160	dit	/	/	not						
170	dit	/	/	look					at it	(2)
180	dit	/	/	dit down						
190	dit	/	/	have		a cookie				
200	dit	/	/	close		it				(2)
210	dit	/	/	empty		it				
220	dit	/	/	don't						
230	dit	/	/	open		that				
240	dit	/	/	put away		books				
250	dit	/	/	open		it				(3)
260	dit	/	/	open		it	up			
270	dit	/	/	put		that	away			
280	dit	/	/	make		a baby				
290	dit	/	/	dit		it		In it		(2)
300	dit	/	/	open		it				(4)
310	dit	/	/	open		it				(2)
320	dit	/	/	open		it				(2)

TYPE	Q	X	S	(DEMON)	X	(DEP)	Y	Z	
1 CA			that		's		a teddy bear		
2 OC	that	's	that				A		
3 CA			there				ladies		
4 CA							back-in-the-box		
5 CA			that		's		the lady		
6 CA				here	's		another bed		
7 CA				here	's		a little spoon		
8 CA			that		's		a teddy bear up		
9 CA				there	's		a lot		
10 CA							helicopter		
11 CA			that		's		a helicopter		
12 CA			that				a nice helicopter		
13 CA							male		
14 CA							Terry		(3)
15 CA					's		a lot		
16 CA			that				Shirley Temple		
17 CA							fluffy bottles		
18 CA							a birdie		
19 CA							fluffy hair		(2)
20 CA							Wendy-the-don		
21 CA							a bathtub		(2)
22 CA							half		
23 CA							two bottles		
24 CA				there	's		in bed		
25 CA			that		's		a boat		
26 CA							boat		
27 CA			thin				a new		
28 CA							kind wily		
29 OC		6					Terry		(2)
30 CA			that				Terry		(4)
31 CA			that				piece		(2)
32 CA			that		's		a Terry		(3)
33 CA			that		's		a box		
34 CA			that		's		box		
35 CA			thin				a box		(2)

TOPIC CENSITIVE OPERATIONS 2415

TYPE	Q	X	(DEMON)	X	(DEMON)	Y	Z
1 'C			Bob	'S	Bob		
2 'C		B	Bob		Bob		
3 'C			Bob		Bob		
4 'C			Bob	'S	Terry		
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
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32							
33							
34							
35							

TOPIC PREDICATIVE UTTERANCES 31:12

LINE	DATE	L	P	Q	X	S	M	V	IO/C	B	O	C	D	E	LOC
1	PA				Heard			won							
2	PA					I		at							
3	PA					this one		at							
4	PA					this one		at							
5	PA					this one		at							
6	PA					this one		at							
7	PA					's that		at							
8	PA							at							
9	PA					you		at							
10	PA					you		at							
11	PA							at							
12	PA							at							
13	PA							at							
14	PA							at							
15	PA							at							
16	PA							at							
17	PA							at							
18	PA							at							
19	PA							at							
20	PA							at							
21	PA							at							
22	PA							at							
23	PA							at							
24	PA							at							
25	PA							at							
26	PA							at							
27	PA							at							
28	PA							at							
29	PA							at							
30	PA							at							
31	PA							at							
32	PA							at							
33	PA							at							
34	PA							at							
35	PA							at							

31:12

[illegible]

TOPIC: PRESIDENTIAL APPOINTMENTS 31:12

DATE	TIME	L	P	Q	R	S	X	M	V	IO/C	B	O	D	IO	C	D	E	Use	Z
12/1						I	10/1		10/1			10			10 11 PM				
12/2						I			10/1			10							
12/3						10	10								10/1 PM				

TYPE	Q	X	(DEMON) S (one/there)	X	Y
1 CA			there		your big's play/it
2 CA			here	's	one monitor
3 CA			there	's	a monitor
4 CA			that	's	the button
5 CA			here	's	the button
6 CA			here	's	your flat
7 CA			there	's	a just-in-time box
8 CA			there	's	card
9 CA			there	's	a circle
10 CC		Φ	that	's	a paper
11 CA			here	's	a cartridge
12				just	a handle
13 CA			here	's	a baby
14 CA			there	's	a monitor
15 CA			there	's	a handle
16 CC	'to	's	that		A
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					

TOPIC DICTIONARIES 31:12

DATE OF TABULATION—

TABLED BY

88

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TOPIC TELETYPE TRANSMISSIONS 31:12

TYPE	X	S	V	IO/C	O	B	C	D	E
12	Can	I	have		a barrette (see #3, above)				
12	Can	I	have		some more water (see #4, above)				
12	Can	I	have		some toothpaste			outside	
12	Can	I	go					out the front porch	
12	Can	I	go						
12	Can	I	drive		you			to take your toys	
12	Can	I	drive		you			with them	
12	Can	I	fix		it			on this side	
12	Can	I	make		something				
12	Can	I	fix	me	a box				
12	Can	I	fix	this					
12	Can	I	take	all the toys				to Grand's house	

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TOPIC IDIOSYNTHOPIC UNRESTRAINED 31:12

TYPE	Self-utter	(Other) (Her)	V	E	C	B	C	D	E	Z
1 IC	/	you	stand		the mirror					1
2 IC	/	/	take		her		cry			2 (3)
3 IC	/	/	have		a reminder					3
4 IC	/	/	at		hair		on him			4
5 IC	/	you	take		think age					5
6 IC	/	lets	have		another one					6
7 IC	/	you	take		a mirror		to carry her			7
8 IC	/		have		her		cry			8
9 IC	/	lets	take		another mirror					9
10 IC	/	you	take		another one			over here		10
11 IC	/									11 (2)
12 IC	/	you	hold		the mirror			so I can brush her hair		12
13		and	hold		the baby				now	13
14 IC	/	you	brush		her					14
15 IC	/	you	core				over here			15
16 IC	/	you	have		this one with the crayons					16
17 IC	/	lets	take		them			to your house		17
18 IC	/	lets	put		these		away		too	18
19 IC	/	you	hold		the mirror					19
20 IC	/	you	hold		this bucket					20
21 IC	/	you	hold		it			like this		21
22 IC	/	/	hold		it					22
23 IC	/	you	even		it			for me		23
24 IC	/		each		her hair			in here		24
25 IC	/		let		to brush her hair			over here		25
26 IC	/	/	to					so we can go on the back porch		26
27 IC	/	lets	core						(5)	27
28 IC	/	/	let		we see your party too		on			28
29 IC	/		play		this					29
30 IC	/	lets	have		more house					30
31 IC	/	lets	core				in			31
32 IC	/	/	let		we put your beds in there					32
33 IC	/	lets	go		a cartilage			so sleep		33 (5)
34 IC	/		take							34
35 IC	/	lets								35

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TOPIC: PSYCHOPHYSIC UTTERANCES 31:12

DATE OF TABULATION

TABULATED BY

TYPE	(Self) (None)	Self- Group	(None) (Other)	V	S	O	S	C	D	E	Z
IC	✓		/	make		in bed		for it			
IC	✓		/	make		for eyes				too	
IC	✓		/	put		hair		or			
IC	✓		you	hold		it		up	like that		

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TOPIC: EXISTENTIAL UTTERANCES 31:12

TYPE	X	S	X	N	Y
1. N/A	15	15	not	Y	Y
2. N/A	15	15	no	Y	Y
3. EA	15	15	15	Y	Y
4. EA	15	15	15	Y	Y
5. EA	15	15	15	Y	Y
6	15	15	15	Y	Y
7	15	15	15	Y	Y
8	15	15	15	Y	Y
9	15	15	15	Y	Y
10	15	15	15	Y	Y
11	15	15	15	Y	Y
12	15	15	15	Y	Y
13	15	15	15	Y	Y
14	15	15	15	Y	Y
15	15	15	15	Y	Y
16	15	15	15	Y	Y
17	15	15	15	Y	Y
18	15	15	15	Y	Y
19	15	15	15	Y	Y
20	15	15	15	Y	Y
21	15	15	15	Y	Y
22	15	15	15	Y	Y
23	15	15	15	Y	Y
24	15	15	15	Y	Y
25	15	15	15	Y	Y
26	15	15	15	Y	Y
27	15	15	15	Y	Y
28	15	15	15	Y	Y
29	15	15	15	Y	Y
30	15	15	15	Y	Y
31	15	15	15	Y	Y
32	15	15	15	Y	Y
33	15	15	15	Y	Y
34	15	15	15	Y	Y
35	15	15	15	Y	Y

APPENDIX C

The Verb Key to Augusta's X-Word,
Quasi-Auxiliary,
and Verb Collocations

APPENDIX C

The Verb Key to Augusta's X-Word, Quasi Auxiliary,
and Verb Collocations

X-WORDS	QUASI-AUXILIARIES	VERB FORM	EXAMPLE
am ('m)		v-ing ¹	I'm cleaning.
is ('s)		v-ing	He's sleeping.
are ('re)		v-ing	They're yelling.
can (n't)		v	I can't fix it.
could		v	Where could it go?
should		v	Where should I put it?
do (n't)		v	I don't like it.
do-s			
does (n't)		v	That doesn't fit.
will ('ll)		v	I'll hold it.
is ('s)	getting	v-n	It's getting washed.
is ('s)	get	v-n	It's get washed.
	got	v-n	It got fixed.
is ('s)	gonna get	v-n	It's gonna get cleaned.
am ('m)	gonna	v	I'm gonna fix the pail.
	gonna	v	He gonna go bye-bye.
	gotta	v	You gotta wash.
	gotta get	v-n	You gotta get washed.
	hafta	v	I hafta wash this.
	hafta get	v-n	I hafta get finished.
	hasta get	v-n	I hasta get finished.
	had to	v	He had to eat.
	'posed to	v	I 'posed to go home.
	better	v	I better fix it.
am ('m)	supposed to	v	I'm supposed to get out.
is ('s)	going	v	The boy's going wash.

¹"v-ing" represents the ING form; "v" alone represents the BASE form of the verb; "v-n" represents the D-T-N Form.

APPENDIX D

Sector Analysis of a Command

APPENDIX D

Sector Analysis of a Command

The sector analysis of Augusta's most complex command is shown in page 95 of Appendix D. The analysis is explained layer by layer on page 96.¹

The features of Augusta's command Let me brush her hair so we can go on the back porch which deserve special attention are noted below:

- Line (1): This command is manifested by a Predicator construction. If it had been a Clausid (You let me brush her hair . . .), an extra layer would have been added to the analysis.
- Line (1): The wavy arrow under the D indicates that the predication about H is an adverbial predication.
- Line (3): The subjects of Clausids (in this case, me) are regularly in the object form. The rectangle indicates that me is a pro-nominal.
- Line (4): In this Predicator, the D sector is unfilled (θ). Augusta could have filled this sector with a Predicator adverbial such as again.
- Line (6): The determiner slot in the Noun Cluster is marked by $\hookrightarrow$; the nucleus slot is marked by * .
- Line (8): This construction is a minimal unit because both sentence adverbial sectors (F and E) are unfilled. Augusta could have filled either of these with her sentence adverbial forms now, then, and first.
- Line (11): The H sector is filled by the minimal Predicatid, +V;; the optional O, B, IO, and C sectors are unfilled.
- Line (12): The Phrase filling the D sector consists of two obligatory slots, the preposition (on) and the object of the preposition (the back porch).
- Line (13): In the Noun Cluster, the $\longrightarrow$ indicates a modifier other than a determiner.

¹The numbers in parentheses at the left are used to facilitate discussion of the analysis; they are not a part of the analysis itself.

APPENDIX D

Symbols Used in Sector Analysis of a Command

- () = Predicator construction
- ← = adverbial predication (when placed below the text)
- { } = Predicative construction
- = Nominal
- ↳ = determiner
- * = nucleus of a Cluster
- K X = Cluster construction
- [] = Clause construction
- i = includer (Clause introducer)
- ← = primary predication (when placed above the text)
- < > = Phrase construction
- = pre-noun (adjectival or noun-adjunct) modifier

- (1) Y: ^H (let me brush her hair, ^D so we can go on the back porch) _{- Pr}
- (2) H: ^V (let ^O me brush her hair) _{- Pd}
- (3) O: ^S (me ^Y brush her hair) _{- Clid}
- (4) Y: ^H (brush her hair, ^D) _{- Pr-}
- (5) H: ^V (brush ^O her hair) _{- Pd}
- (6) O: ^K her hair _{- nK}
- (7) D: ^I [so/we can go on the back porch] _{- Cl}
- (8) U: ^F (we can go on the back porch ^E) _{- Ut-}
- (9) T: ^S (we ^X can go on the back porch ^Y) _{- Tk}
- (10) Y: ^H (go on the back porch) _{- Pr}
- (11) H: ^V (go ^{po} on the back porch) _{- Phr}
- (12) D: ^V (go ^{po} on the back porch) _{- nK}
- (13) po: ^K the back porch _{- nK}

APPENDIX D (continued)

The analysis shown on the preceding page is interpreted below.

It should be noted that each tagmeme in an utterance consists of a position (indicated in the left-hand margin) which is filled by a construction (identified in the right-hand margin). Each construction, in turn, consists of a sequence of lower-layer tagmemes, some of which are optional and others of which are obligatory. Constructions in which only the obligatory tagmemes occur (in a given utterance) are called "minimal" construction and are marked with a raised "-".

- Line (1): The command is a Y-layer tagmeme which consists of the Y sector filled by the Predicator H + D.
- Line (2): The H tagmeme in the Predicator consists of the H sector filled by a V+O Predicatid.
- Line (3): The O tagmeme consists of the O sector filled by the Clausid S+Y.
- Line (4): The Y tagmeme in the Clausid consists of the Y sector filled by the minimal Predicator (+H-D).
- Line (5): The H tagmeme in the Predicator consists of the H sector filled by a V+O Predicatid.
- Line (6): The O tagmeme consists of the O sector filled by a Noun Cluster (determiner + noun nucleus).
- Line (7): The D tagmeme (from line 1) consists of the D sector filled by a Clause (includer + unit).
- Line (8): The U tagmeme consists of the U sector filled by a minimal unit (-F+T-E).
- Line (9): The T tagmeme consists of the T sector filled by the Trunk (S+X+Y).
- Line (10): The Y tagmeme in the Trunk consists of the Y sector filled by the Predicator (H+D).

APPENDIX D (continued)

- Line (11): The H tagmeme consists of the H sector filled by the minimal Predicatid (+V).
- Line (12): The D tagmeme of the Predicator (in line 10) consists of the D sector filled by a Phrase (preposition + object of preposition).
- Line (13): The object of the preposition tagmeme consists of the po slot filled by a Noun Cluster (determiner + modifier + noun nucleus).

APPENDIX E

Augusta's Idiotropic Assertions with Want and Need,
Questions with Can, and Commands with Let's

APPENDIX E

Augusta's Idiotropic Assertions with
Want and Need, Questions with Can,
 and Commands with Let's¹

- 19:8 Don't want.
- 22:11 I want blocks.
 I want doggie ride horsie.
 I want up.
 Can I have it?
 Can I?
 Let's open it.
- 22:25 I want Raggedy Ann.
 I want read book.
 I wanna talk to Terry.
 I wanna play two blocks.
 I wanna sit down.
 I wanna hold it.
 I wanna open it.
 Want read book.
- 22:9 I want play tenpins.
 I want carry baby.
 I want carry it.
 I wanna hold it.
 I need a bath.
 I need baby bath.
 I need books.
 Want talk.
 Want talk Mommy.
 No want shoes on.
- 24:1 I want touch that giraffe.
 I want a baby.
 I wanna see that.

¹For Augusta's idiotropic questions and commands with You subjects, see Appendix F.

APPENDIX E (continued)

- 24:15 I don't want to.
I don't want his eyes out.
I don't want to play babies.
I want * not this thing.
I don't want it come out.
I don't want a baby in there like that.
I need it.
I need another baby.
I need that.
I need baby's potty chair.
I don't need that.
Can I have all the babies?
Can I put on it?
Can I look in there?
Can I have it?
Can I look at it?
Can I get it?
Can I open it?
Can I look at the cards?
Can I draw on paper?
Can I show it to Rosa?
Can I put them in here?
Don't want play babies
Want sleep in there.
Want have him.
Don't wanna put away.
Need another baby.
- 25:10 I need the baby's blanket.
I need one.
I don't wanna read it.
I wanna go downstairs.
I want it.
Can I have it?
- 26:6 I want look at candy.
Can have more?
Can I have more?
Can I have more penny?
Can I have it?
Can I have piece?
Can I have that?
Can I have more candy?
Can more?
Can I have them?
Can I have two?
Can have more candy?
Can I have something also?

APPENDIX E (continued)

- 26:6 (continued)
Can I have a babies?
Can I have lotion?
Wanna squeeze it.
- 26:18 I don't want the boy in there.
I don't want this in here.
I don't want to.
I wanna go hop.
I wanna comb your hair.
I want that bed fits right here.
I need a cradle.
Don't want to.
- 27:1 I need clean the boy.
I need to fit up there.
I needa look like going nite-nite.
I need go Larry.
I want to have them.
Can I have a washcloth?
Can I have that?
- 27:24 I don't want a machine.
I need them.
I need it for my baby.
I need a box.
Let's get the soap.
Let's clean up.
Let's stop the boys.
Can I clean it?
Can I take them out?
Can I have a box?
- 28:17 I wanna clean up some more.
I wanna go in your pocket.
I want you take that away to Abraham.
I need a baby.
I need toilet.
I need some candy.
I need look at Doris.
Let's go to your house.
- 28:28 I need soap.
I need your books.
Let's clean those.
Can I clean the house?
Can I have them?
Can I wash her off?

APPENDIX E (continued)

29:16 I want clothes in there.
I wanna get down.
I wanna look at the pictures.
I needa go on the horsie.
I don't wanna.
I don't wanna count the beds.
I wanna get off.
I want that box.
I wanna go on the horsie.
I wanna hold it.
Can I have the washing machine?
Can I play checkers?
Wanna look at that one.
Wanna wash her.
Wanna go on the horsie.
Need a cloth.
Want no more.
Don't wanna.

30:13 I need more pennies.
I want a bandaid on it.
I don't wanna watch TV.
Let's see a different color.
Let's look at colors.
Let's make a tower.
Let's play with these.
Let's go bye-bye in the car.
Let's go.
Let's take them home to our house.
Let's take our car.
Let's take another two of them girls.
Let's go in there.
Let's go in there.
Let's go here.
Let's play games.
Let's eat dinner now.
Let's eat that.
Let's eat the cake.
Let's eat with a fork.
Let's get washed.
Let's go out of here.
Let's go bye-bye.
Want a tissue.
Need a car.

APPENDIX E (continued)

- 30:27 I don't want to.
 I don't want to make in the plate.
 I want 'nother gum drop.
 I want 'nother one.
 I want this one kind.
 I want a red one.
 I need give one to Rosa.
 I want that.
 I wanna look at them.
 I wanna use this one.
 Can I have some more?
 Can I give one to Rosa?
 Can I have another one?
 Can I have one?
 Let's make a house.
 Let's get out of here.
 Let's get candy the boy.
- 31:12 I think I want this one with the boy on it.^a
 I think I need a sprayer.^a
 I need some hair.
 I need a plate.
 I need a barrette.
 Can I have a barrette?
 Can I have some more water?
 Can I have some powder?
 Can I have it?
 Can I go outside?
 Can I go out the front porch?
 Can I drive you?
 Can I drive you to take your toys?
 Can I play with Shari?
 Can I make something on this side?
 Let's write on something.
 Let's make another one.
 Let's make another Mommy.
 Let's take them to your house.
 Let's put them away too.
 Let's go in here.
 Let's wash her hair over here.
 Let's go.
 Let's play this.
 Let's make some house.
 Let's go to sleep.
 Let's make a carriage.
 Need some yellow.

¹Idiotropic assertions embedded in the 0 sector after think.

APPENDIX F

Augusta's Idiotropic Questions and Commands
with You Subjects

APPENDIX F

Augusta's Idiotropic Questions and
Commands with You Subjects

- 22:11 Don't you step on it, Mommy.
- 25:10 You sit down.
- 26:18 You sit right here.
You hold on.
- 27:24 You drink your cup.
You get in here.
You come.
You clean with soap.
You keep this?
- 28:17 You clean her.
You wash her.
You wash a Daddy.
You scrub a bathroom.
You clean this.
You scrub off the dish.
You brush off the girls.
You brush off a baby.
You brush it off.
You put some water on it.
You sit down.
You find it.
You find the jack-in-the-box.
You play with me.
You push a buttons.
You push a timer.
You put around timers.
You play.
You push this one.
You play with this.
You play with that.
You help me.
You drive Howie.
You play with timer buttons
You come here.
You drive.

APPENDIX F (continued)

- 29:16 You put the cover on it.
You hold it for me.
You put up there.
You clean.
You hold him a minute.
You come and sit.
You wind it for me.
You clean the house.
You clean it.
You put me on the horsie.
You wash the baby off?
- 30:13 You put the water in here.
You make a tower.
You bring some orange juice.
You eat more.
You put back on the cover.
You open that?
You help me?
You help me with this?
You give me one?
You stand this little girl up?
You give me some orange juice?
You fix it?
You help me to fix it?
You take off this?
You fix it again?
You fit them in here?
You make one?
- 31:12 You draw the mommy.
You take that one.
You make a mommy to carry her.
You make another one.
You hold the mirror, and you hold the baby
so I can brush her hair, OK?
You brush her now.
You come over here.
You have this one with the crayons.
You hold the mirror.
You hold this bucket.
You hold like this.
You open it for me.
You hold it up like that.
You get me a box?
You fix this?
You take all the toys to Shari's house?

APPENDIX G

✓ Toys and Books Frequently Mentioned in Text

APPENDIX G

Toys and Books Frequently Mentioned in Text

TOYS:

Fisher-Price Doll House
with plastic furniture
and wooden 'family'

plastic washing machine

plastic bathroom fixtures

ball and tenpins

blocks

assorted coffee cars
and other containers

hobby horse

large teddy bear (50 inches tall)

stuffed lamb, pig, and cat

assorted dolls, doll clothes,
blankets, and doll furniture

wind-up toys, including radio,
and monkey

snap-beads

crayons and paper

BOOKS:

Robert L. Stevenson, A Child's Garden of Verses (Random House)

Baby's Day (A Wonder Book)

APPENDIX H

Constituent Structure of Augusta's Construction-Types

APPENDIX H

Constituent Structure of
Augusta's Construction-TypesCluster

Noun Cluster = $\pm$ determiner $\pm$ numeral $\pm$ adj-of-evaluation $\pm$ adj-of-size
 $\pm$ adj-of-age $\pm$ adj-of-color $\pm$ noun-adjunct $\pm$ noun nucleus
 $\pm$ post-nucleus Phrase

Adjective Cluster = $\pm$ too $\pm$ adjective nucleus

Possessive

Possessive = $\pm$ noun $\pm$ sign-of-the-possessive ('s)

Phrase

Phrase = $\pm$ preposition $\pm$
 $\left\{ \begin{array}{l} \text{nominal} \\ \text{pro-nominal} \\ \text{pro-locative} \end{array} \right\}$

Clause

Clause = $\pm$
 $\left\{ \begin{array}{l} \text{adverbial includer} \\ \text{nominal includer} \end{array} \right\}$ $\pm$ Trunk

Clausid

Clausid = $\pm$ S: $\pm$ M: $\pm$ Y:

Predicatid

Predicatid = $\pm$ V: $\pm$ IO/C: $\pm$ B: $\pm$ O: $\pm$ B: $\pm$ IO: $\pm$ C:

Appendix H (Continued)

Consociative-Predicativ

Consociative-Predicativ = +V: +D_v:

Consociate

Consociate = J: +D_j:

Predicator

Predicator = +H: +D

Trunk

Trunk = +S: +X: ±M +Y:

Unit

Unit = ±F: +T: ±E:

Sentence

Sentence = ±Topic: ±Voc: +U: ±Z: ±Voc: +sentence-intonation¹

¹Topic, Vocative, and Z tagmemes are analyzed as being on the Sentence layer, but they are outside the propositional construct content of the utterance inasmuch as they do not alter that construct in any way.